

An aerial view of a road intersection processed with LiDAR technology. The point cloud is rendered in grayscale, showing the texture of the ground and surrounding vegetation. Overlaid on this are various digital road markings: solid yellow lines for lane boundaries, dashed green lines for lane markings, red hatched areas for crosswalks or no-parking zones, and blue arrows indicating traffic flow. The text is centered over the intersection area.

*Intelligent Point Cloud Feature
Extraction and Analysis Software*

www.greenvalleyintl.com

LiDAR360MLS





SOFTWARE

INTELLIGENT POINT CLOUD FEATURE EXTRACTION AND ANALYSIS SOFTWARE

LiDAR360MLS is an intelligent feature extraction and analysis software platform independently developed by GreenValley International. It supports LiDAR point cloud and imagery data processing from mainstream vehicle-mounted, backpack, and handheld mobile mapping systems. With a complete end-to-end workflow, LiDAR360MLS integrates point cloud processing, GIS asset inventory, architectural drawing generation, 3D vector mapping, road condition assessment, railway inspection, urban forestry inventory, 3D Gaussian Splatting, digital twin, virtual reality, and other industry-specific applications. **LiDAR360MLS ushers in the era of Intelligent 3D Data Processing 2.0.**



Massive Data Loading and
Cluster Processing



Multi-Source Data Fusion Processing,
Mapping, Analysis, Modeling



Independently Developed
Underlying Engine



Efficient and Friendly 3D
Interactive Editing



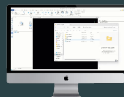
Leading Artificial
Intelligence Algorithm



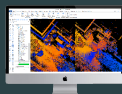
Integrated Management of Collection,
Editing, Database Storage, etc.



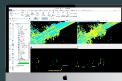
Collect



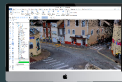
Point cloud
Generation



Registration



Strip Adjustment



Colorization

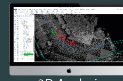
Quality Assessment
& Optimization



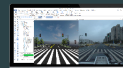
Rapid Visualization and Processing



Intelligent Extraction



3D Analysis



3D Real Scene



GS Reconstruction

Manage&Extract
&Analysis&Modeling



Publish



GIS
Assesst



AEC
Drawing



Urban
Forestry



Road
Condition



Digital
Twin



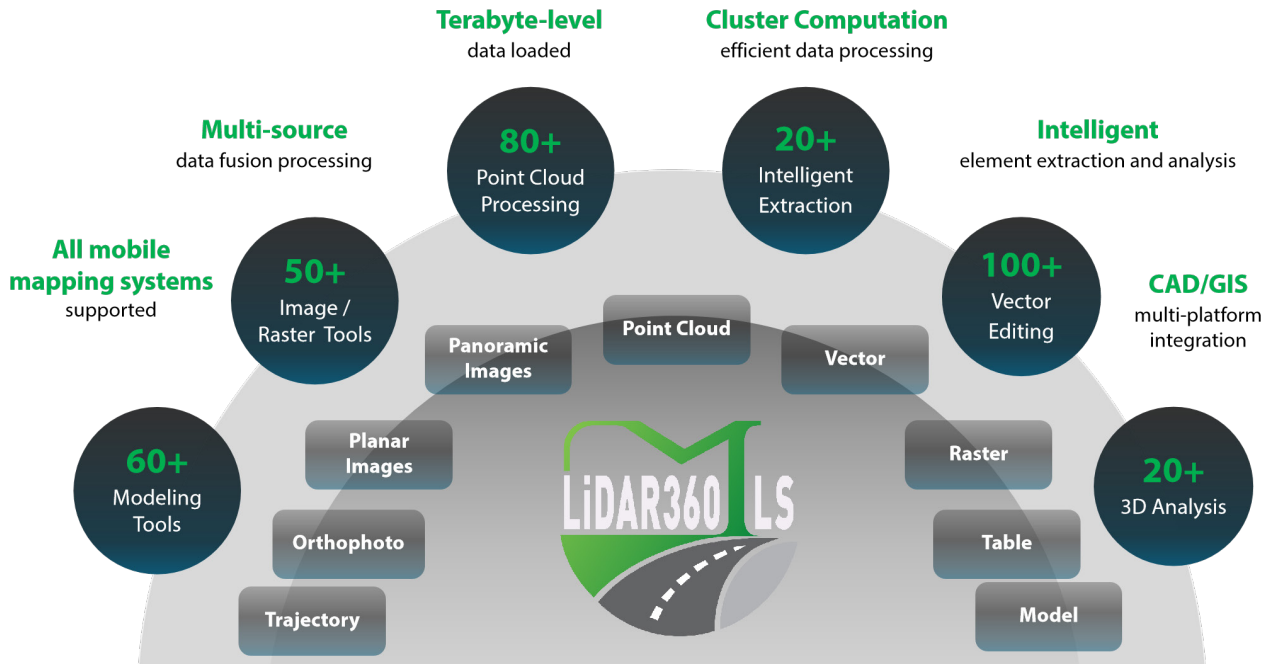
3D GIS

Industry
Applications

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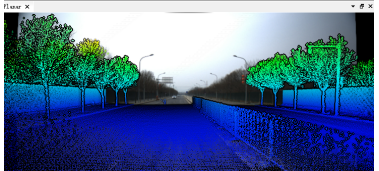
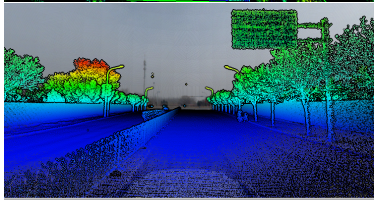
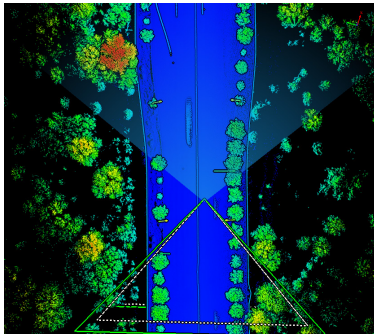
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Framework

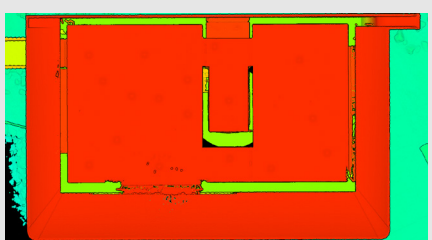


Data Loading and Rendering

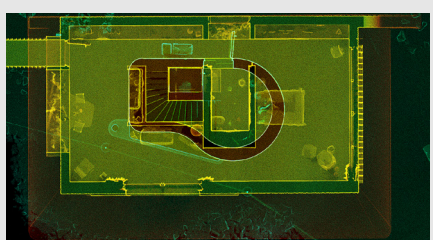
- Supports point cloud and imagery data from a wide range of mobile mapping systems.
- Supports international units, including meters, feet, yards, and more.
- Supports synchronized visualization of point clouds, planar camera images, and panoramic imagery, with measurement and boresight calibration tools to assist data acquisition and editing.
- Supports the combined visualization of multiple point cloud attributes, with customizable additional attributes to meet diverse application requirements.
- Provides comprehensive point cloud snapping tools with automatic snapping to feature points such as planes, edges, and corners.
- Seamlessly overlays point clouds, raster data, 3D Gaussian Splatting (3DGS) models, and various 3D models on online maps.



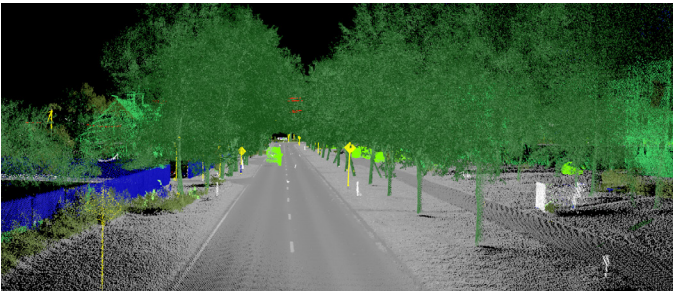
Display by Height



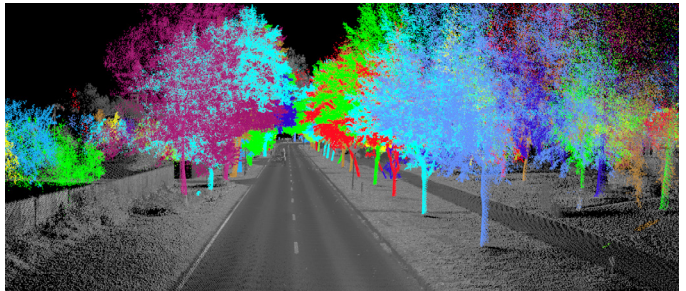
Display by Height+EDL



Display by Height+X-ray



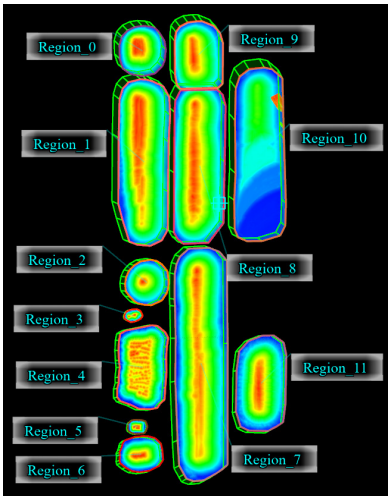
Display by Classification+Intensity



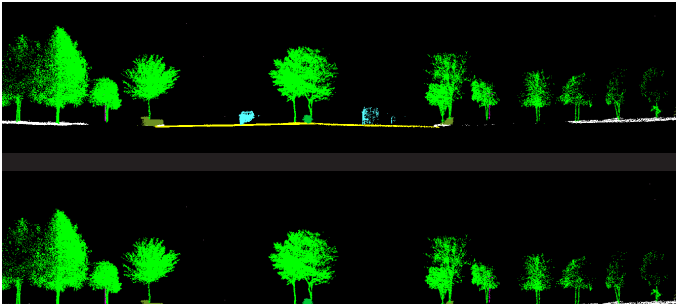
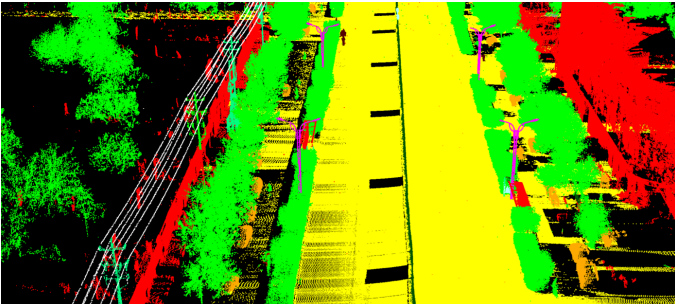
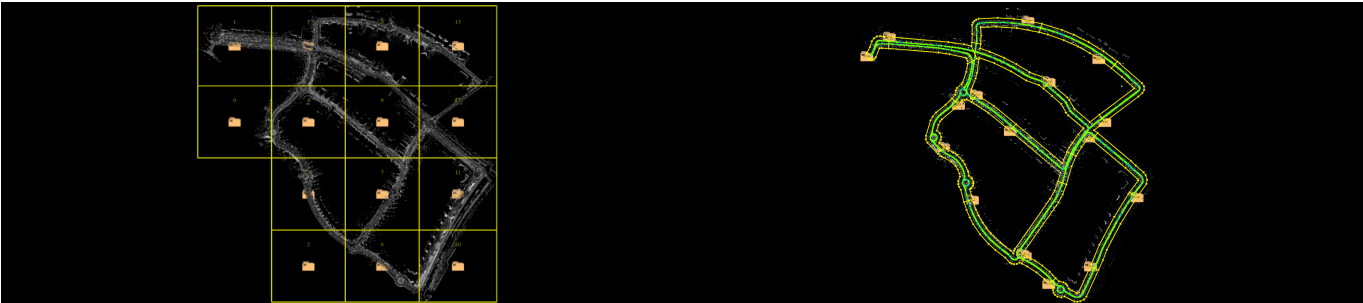
Display by TreeID+Intensity

All-in-One Data Processing Tools

- Supports multi-region volume measurement and multi-temporal volume change analysis using Grid and TIN methods.
- Provides comprehensive point cloud processing tools, including extraction, registration, export, classification, projection and coordinate transformation, selection and clipping, measurement, and more.
- Supports point cloud slicing by scale, strip, and multiple slicing modes, with interactive slice editing capabilities.
- Provides comprehensive vector processing tools, including feature extraction, format conversion, field calculation, overlay analysis, proximity analysis, quality inspection, and projection and coordinate transformation.
- Provides raster processing tools, including measurement, surface analysis, raster calculation, format conversion, and projection transformation.



Name	Color	CellSize (m)	Basic Height	Size (L*W*H)	Project Area (m2)	Empty Volume (m3)	Cut(m3)	Fill(m3)	Total(m3)	Density (kg/m3)	Weight (kg)
Region_0		0.1	Minimum	39.37*43.65*12.91	1404.79	0	8437.94	0	8437.94	1	8437.94
Region_1		0.1	Minimum	43.11*142.08*15.64	5508.44	0	44126.6	0	44126.6	1	44126.6
Region_2		0.1	Minimum	35.97*37.79*12.97	1073.3	0	5202.63	0	5202.63	1	5202.63
Region_3		0.1	Minimum	15.37*10.64*2.4	120.586	0	86.258	-0.01	86.248	1	86.248
Region_4		0.1	Minimum	41.62*68.66*9.64	2460.9	0	11126.7	-0.036	11126.6	1	11126.6



Intelligent Point Cloud and Imagery Processing

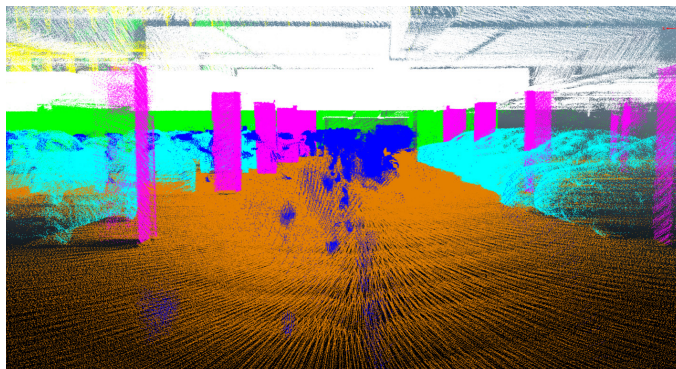
- Provides a complete AI workflow for point cloud and imagery data, covering annotation, model training, and inference.
- Supports local training of custom AI models and projects image detection results into 3D space.
- Supports custom deep learning-based point cloud classification, enabling users to train models tailored to their own datasets. Also supports few-shot learning.
- Supports AI-assisted image annotation powered by the Segment Anything Model (SAM).
- Supports AI-based license plate and face blurring for privacy protection.



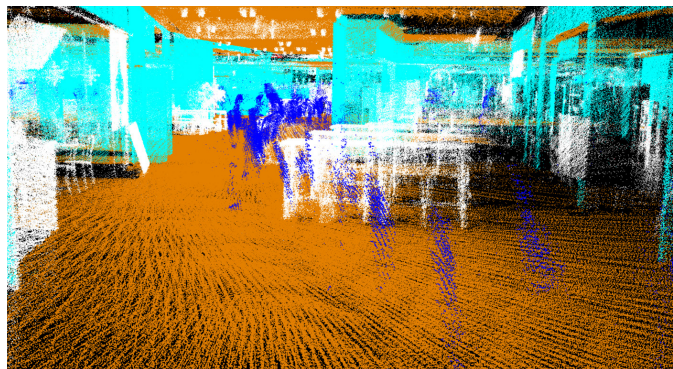
AI-based Plates and Faces Blurring



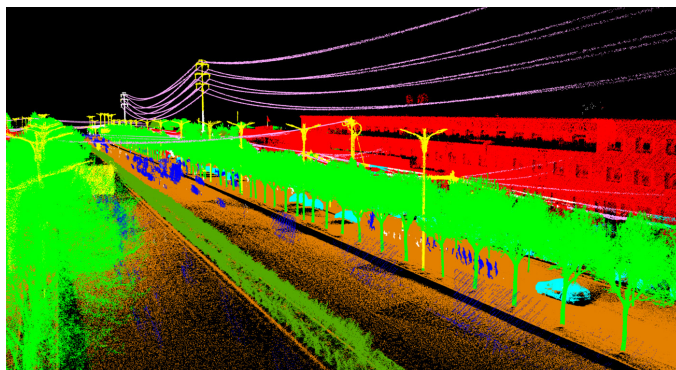
Image Object Detection



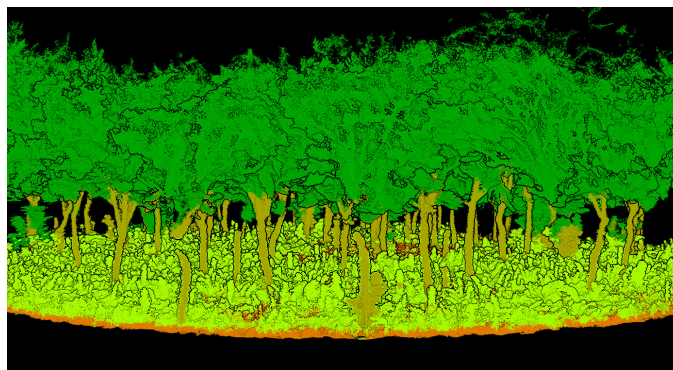
Scene 1: Underground Parking Garage



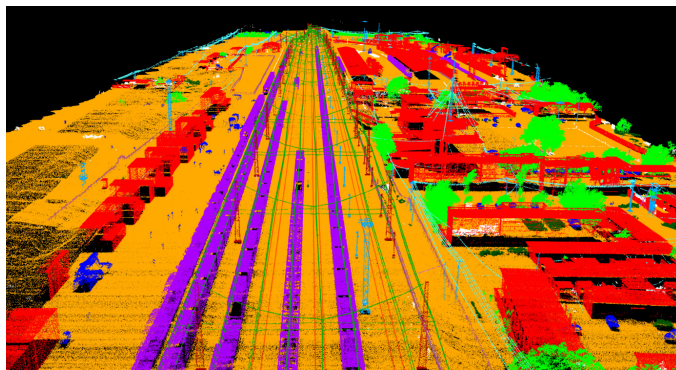
Scene 2: Shopping Mall



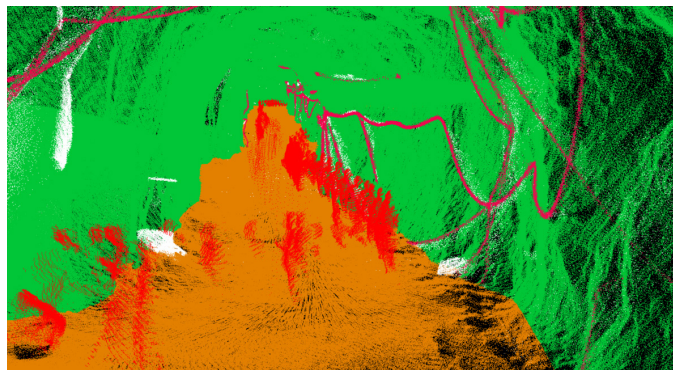
Scene 3: Urban Road



Scene 4: Forestry



Scene 5: Railway



Scene 6: Mining Tunnel

Vector & Attribute Editing

- Supports vector mapping with multi-source data fusion.
- Supports 2D horizontal/vertical section mapping.
- Provides more than 100 vector editing and analysis tools, including drawing, editing, geometry conversion, feature extraction, overlay analysis, proximity analysis, and coordinate transformation.
- Supports Point, Line, Polygon, MultiPoint, and MultiLine geometry types.
- Provides multiple snapping and editing modes for vector vertices.
- Supports vector layer and attribute management, including attribute table template customization.
- Includes a powerful field calculator with more than 300 built-in functions and Python scripting support. Also supports object photo database management.
- Provides a built-in road asset symbol library compliant with national standards, as well as a general-purpose symbol library.
- Supports adding annotations to point clouds, vector features, and multi-level geometric elements such as vertices and edges.

Crosswalk

	FID	Shape	Type
2	2	Polygon	0
3	3	Polygon	22

Show All Features 0 of 27 selected

Pole

	Object ID	DBH	Height
28	57	0.310286	8.005141
29	41	0.648746	31.148277

Show All Features 0 of 104 selected

Tree

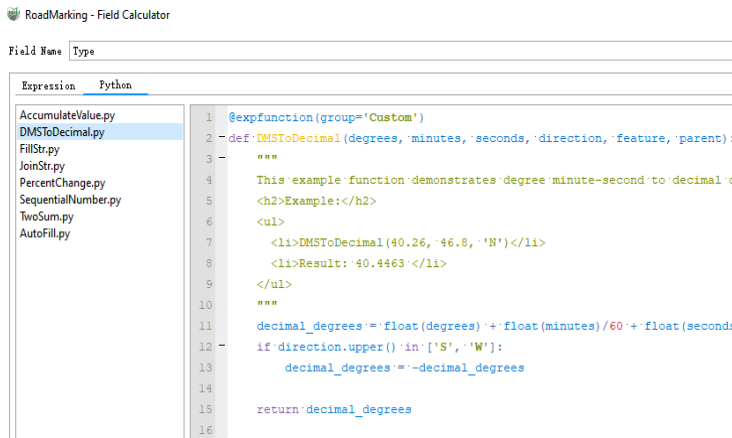
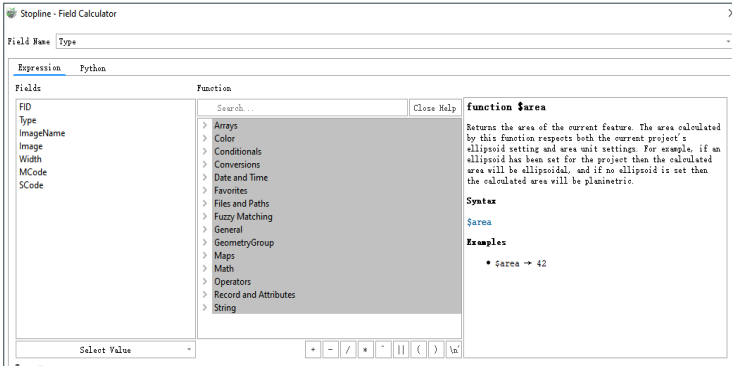
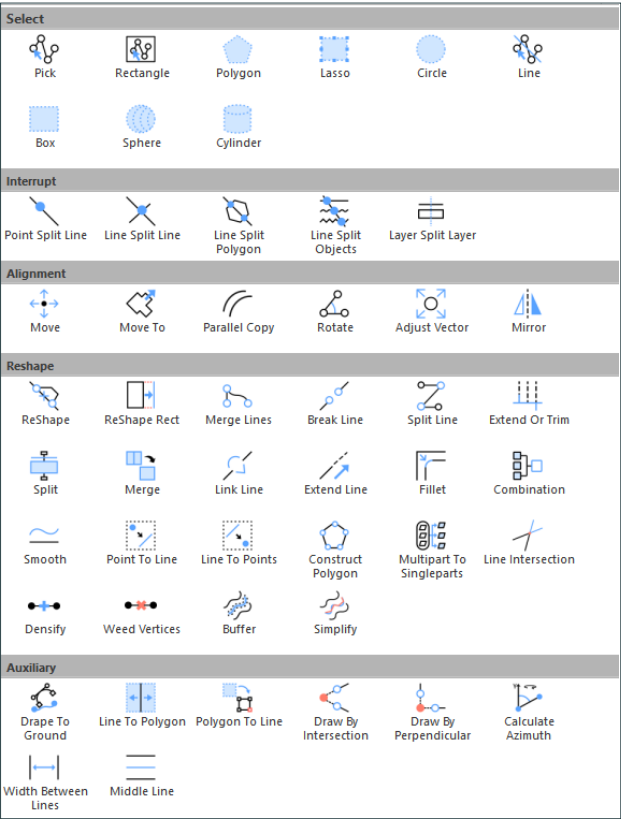
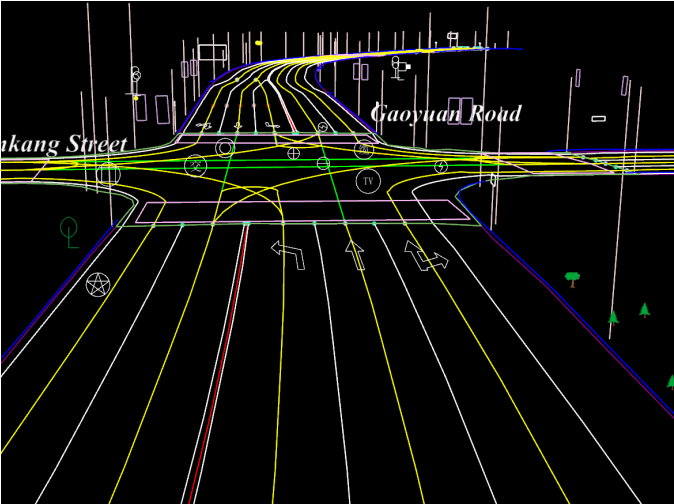
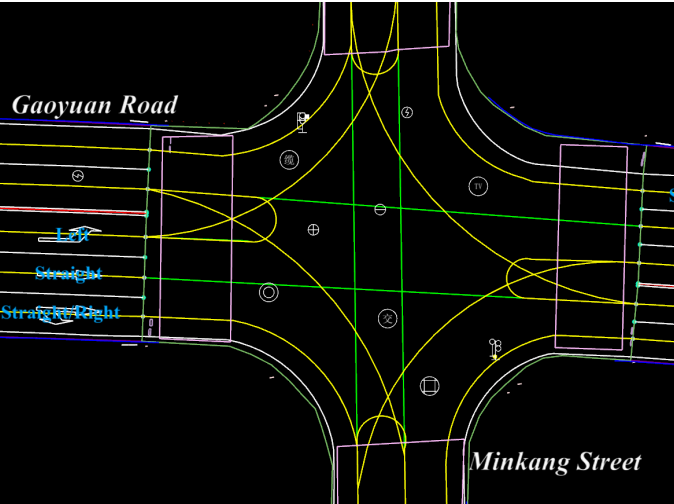
	Object ID	X	Y
11	38	6439344.623327	1679039.888015
12	57	6439366.933153	1679060.566937

Show All Features 0 of 24 selected

RoadSideLine

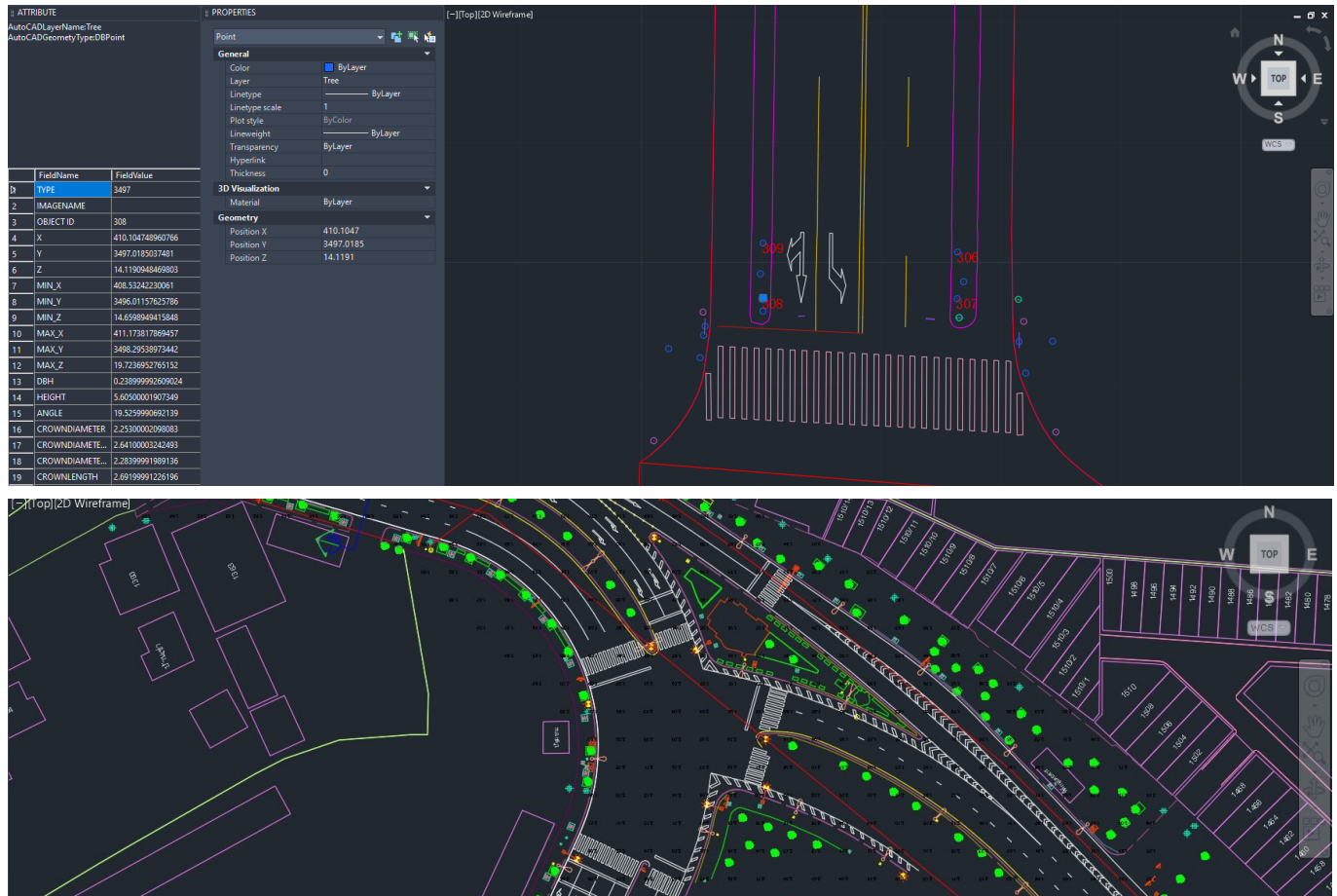
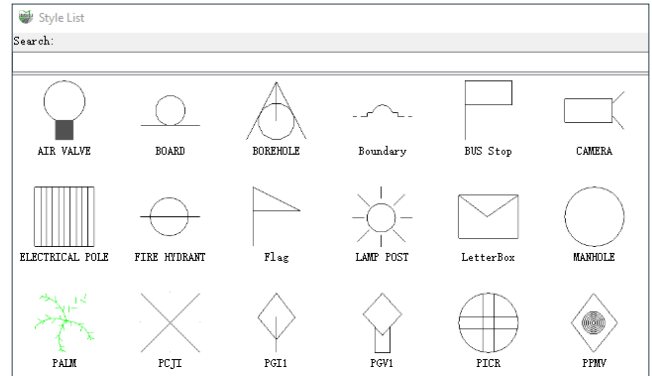
	FID	Shape	Type	Im
10	10	Polyline	Curb	
11	11	Polyline	Curb	

Show All Features 0 of 34 selected



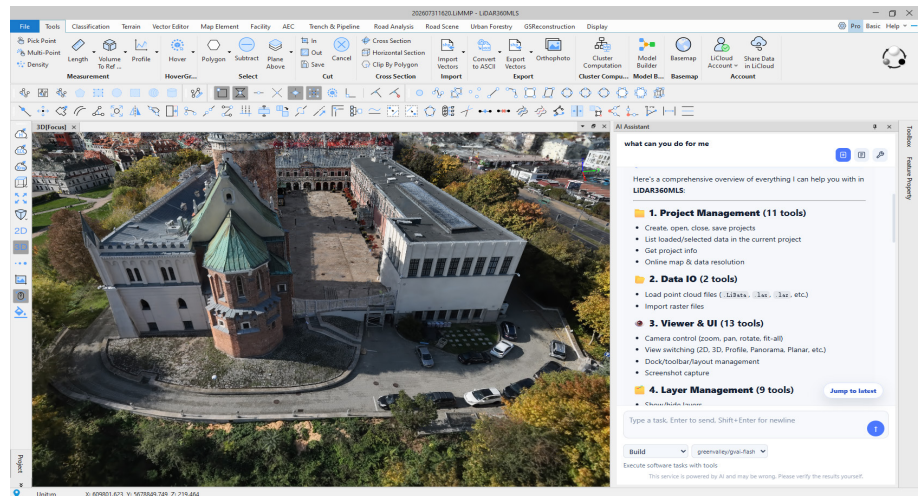
AutoCAD Plugin

- Supports zero-configuration, one-click installation with compatibility across multiple CAD and Civil 3D software versions.
- Seamlessly integrates with AutoCAD for geometry, attribute data, annotations, and style management.
- Supports import and export of GPKG, SHP, DXF, JSON, GeoJSON, tabular data, and raster data.
- Enables attribute queries, along with symbol style management, definition, and editing.
- Provides multi-mode batch symbolization capabilities.



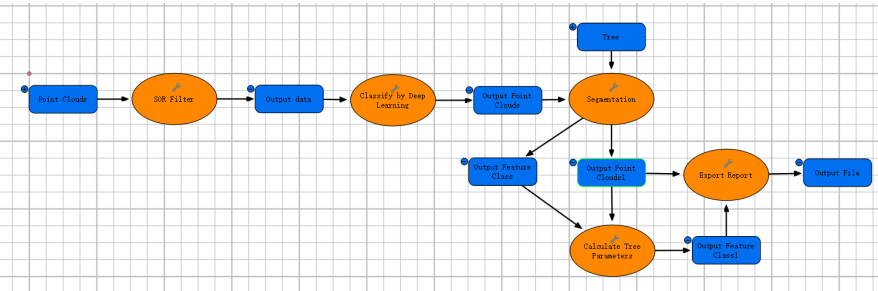
AI Assistant

- Powered by a built-in AI Agent, it delivers intelligent understanding, precise task execution, and instant responses—making complex workflows simpler, faster, and more intuitive.



ModelBuilder and Batch Processing

- Supports customizable workflow automation for point cloud, vector, and raster processing, intelligently orchestrated by an integrated AI Agent.
- Provides a fully customizable visual workflow canvas, allowing processing models to be saved, exported, and shared.
- Includes built-in, one-click batch workflows for a wide range of applications, including road marking extraction, pavement distress analysis, individual tree segmentation, and forestry parameter calculation.
- Supports high-performance cluster computing for large-scale data processing.



what can you do for me

Here's a comprehensive overview of everything I can help you with in LIDAR360MLS:

1. Project Management (11 tools)

- Create, open, close, save projects
- List loaded/selected data in the current project
- Get project info
- Online map & data resolution

2. Data IO (2 tools)

- Load point cloud files (.LiData, .las, .laz, etc.)
- Import raster files

3. Viewer & UI (13 tools)

- Camera control (zoom, pan, rotate, fit-all)

[Jump to latest](#)

Type a task. Enter to send, Shift+Enter for newline

Build

Execute software tasks with tools

This service is powered by AI and may be wrong. Please verify the results yourself.

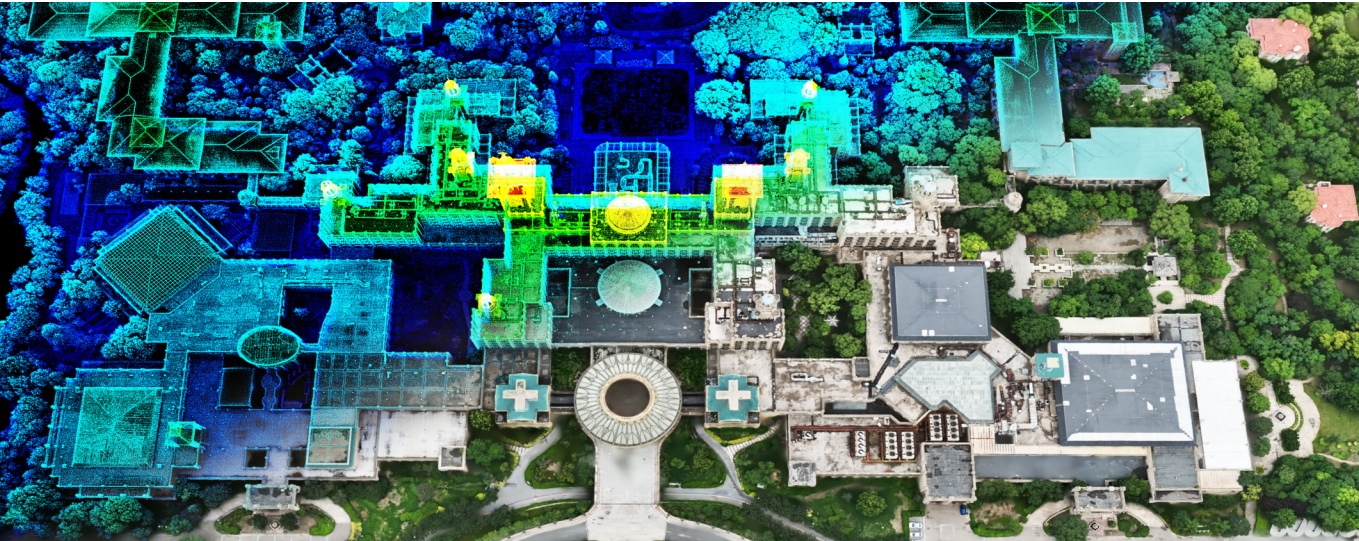
Cluster Computing

- The cluster computing engine significantly improves the efficiency of georeferencing, point cloud processing, and model reconstruction.

Comparison Table of Cluster Computing Efficiency Improvements for Selected Functions

Device Configuration	Function	Data Size	Number of Cluster Engines	Efficiency Improvement
System: Windows 11 CPU: Intel(R)Core(TM)i7-10700K RAM: 64GB GPU: NVIDIA GeForce RTX 3060 GPU Memory: 12GB	LiGrip GSReconstruction	Data Collection: 60 minutes Coverage Area: 200m*200m	2	+90%
			4	+210%
	COLMAP GSReconstruction	Image Count: 20,000 Coverage Area: 3.8 km*1.8 km	2	+100%
			4	+200%
	Point Cloud Generation	5 Projects	2	+200%
			5	+400%
	Deep Learning Classification+Conversion of Point Clouds	137GB	2	+201%
			3	+298%

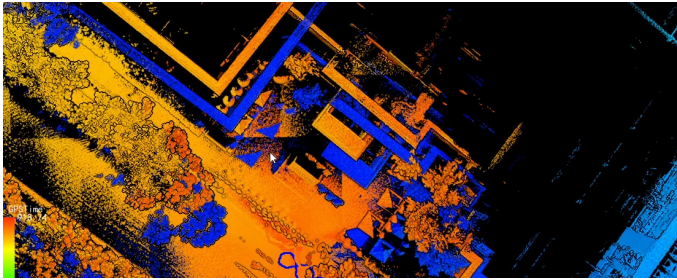
*Note: Actual performance improvements may vary depending on hardware configuration, network bandwidth, switch performance, storage performance, and dataset size. The results shown above are for reference only.



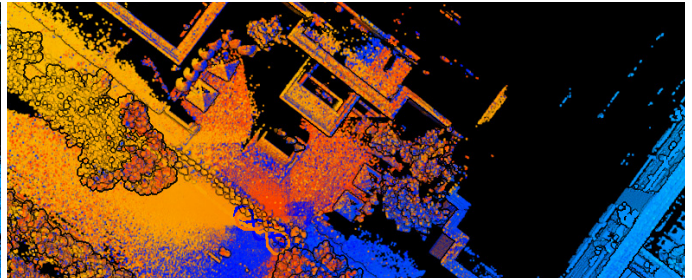
BP Module

- Supports one-click batch project creation and processing for LiGrip and LiBackpack.
- Supports point cloud generation in coordinate systems using meters, feet, or yards.
- Supports PPK processing and the export of PPK trajectory quality reports.
- Supports base station data in RINEX, NovAtel, and RTCM 3 formats.
- Supports multiple coordinate transformation methods, including seven-parameter transformations, geoid models, linear offsets, and projection to a specified elevation.
- Supports custom ellipsoids, projected coordinate systems, and vertical coordinate systems.
- Supports one-click MESH model generation and export.
- Supports one-click AI-based point cloud classification.
- Supports GCP import and selection, enabling georeferencing and improved point cloud accuracy.
- Supports high-density point cloud generation for LiGrip datasets for enhanced scene realism.
- Supports registration and editing tools for single/multiple projects.
- Supports SLAM closed-loop editing tools.
- Supports SLAM calibration parameter updates.
- Supports quality inspection and accuracy improvement.
- Supports moving object removal.

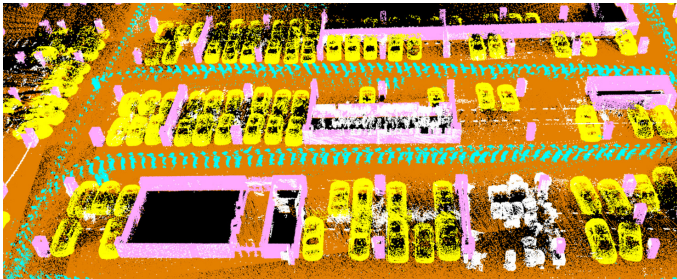




Before Closed-Loop Editing



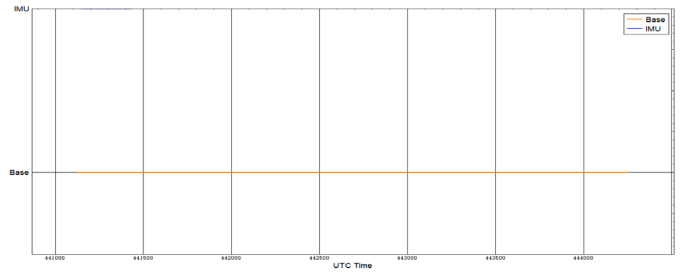
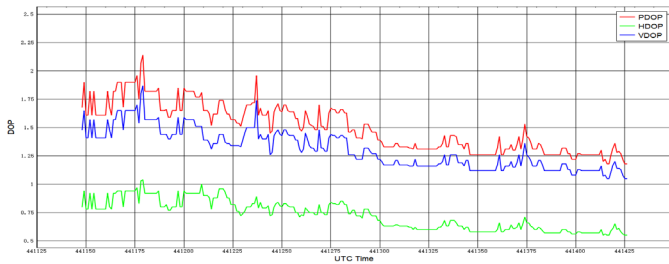
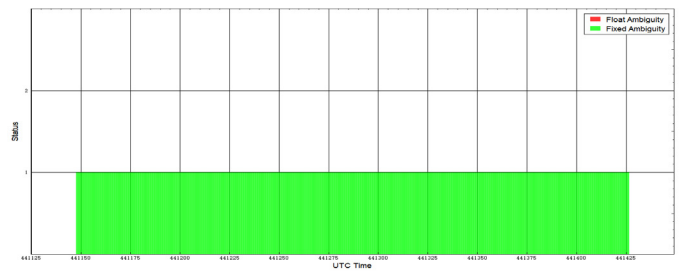
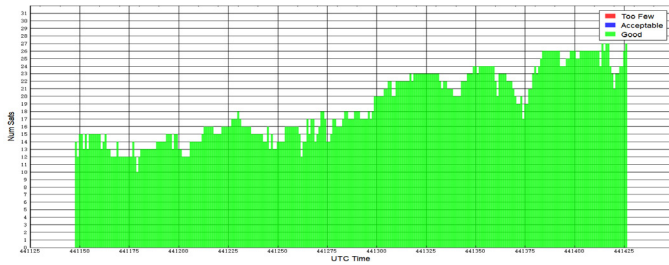
After Closed-Loop Editing



Before Moving Objects Removal



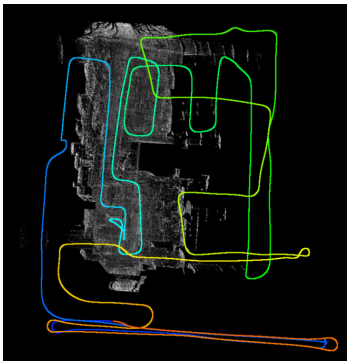
After Moving Objects Removal



PPK Quality Report

Geo Module

- Supports intelligent data quality inspection and copying, automatically generating raw data quality reports (including camera, laser, and IMU statistics).
- Supports a new data processing workflow to continuously improves algorithm performance and data quality.
- Supports one-click point cloud generation for LiMobile data.
- Supports point cloud generation in coordinate systems using meters, feet, or yards.
- Supports SLAM processing for LiMobile data, effectively optimizing trajectories in GPS-denied but feature-rich environments such as underground parking lots.
- Supports multi-source data registration for complex scenarios.
- Supports quality inspection and accuracy improvement.
- Supports point cloud boresight calibration as well as extrinsic calibration of panoramic and planar cameras, without requiring the mapping system to be returned to the factory.
- Supports point cloud and trajectory accuracy analysis, automatically identifying and correcting anomalies such as trajectory jumps.
- Supports an optimized coloring algorithm with improved sky color rendering and smoother color transitions.
- Supports relative alignment of MLS point cloud data, GCP-based global optimization across multiple projects, and comprehensive accuracy reporting—ensuring high-precision data for downstream workflows.
- Supports moving object removal.



Integrated Navigation Trajectory



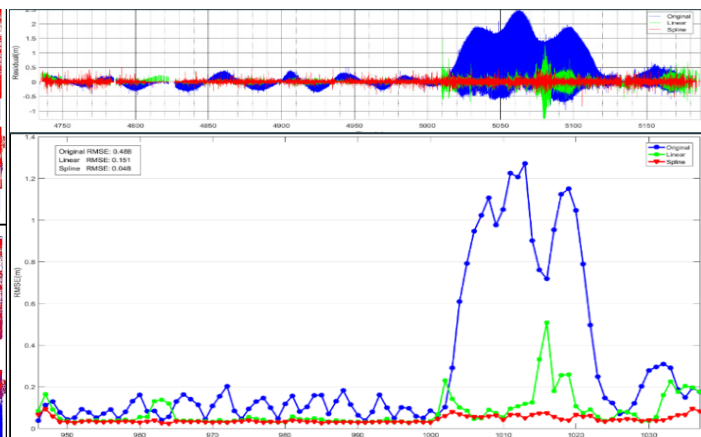
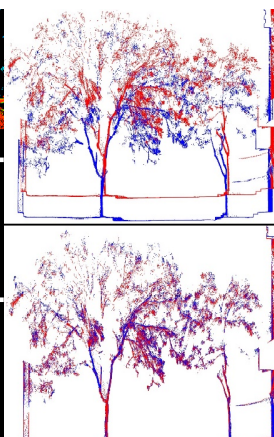
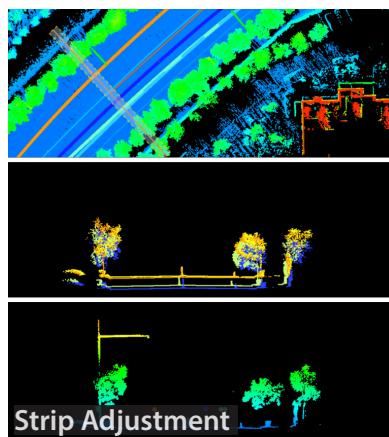
Integrated Navigation + SLAM Trajectory

1. Project Summary:

Project Name	Collect Time (s)
demo_2025-01-24-03-46-25	120.089

2. Camera Statistics:

Camera	Number of Images	Number of Triggers	Deviation
Planar_F1	217	218	1
Planar_F2	217	218	1
Planar_B1	0	0	Unreadable
Planar_B2	0	0	Unreadable
Panorama	318	318	0



Terrain

High-Precision Terrain Modeling

Reconstruct accurate and seamless digital terrain models from point cloud or cross-section data.

Comprehensive Terrain Products

Generate DEMs, DSMs, contour lines, and other standard terrain deliverables with one-click processing.

Intelligent Terrain Analysis

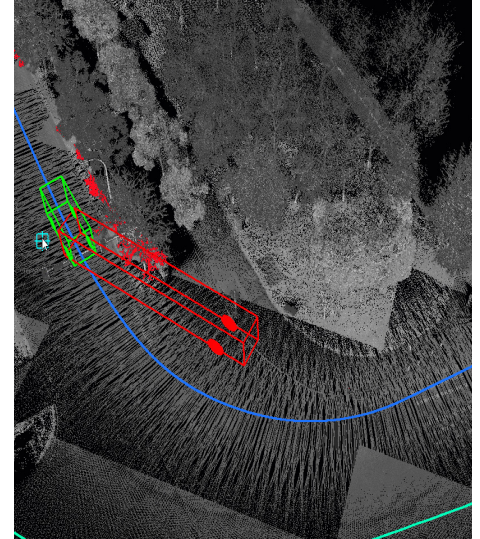
Evaluate vehicle passability across complex terrain to support planning, design, and operational decision-making.

Seamless GIS & Engineering Integration

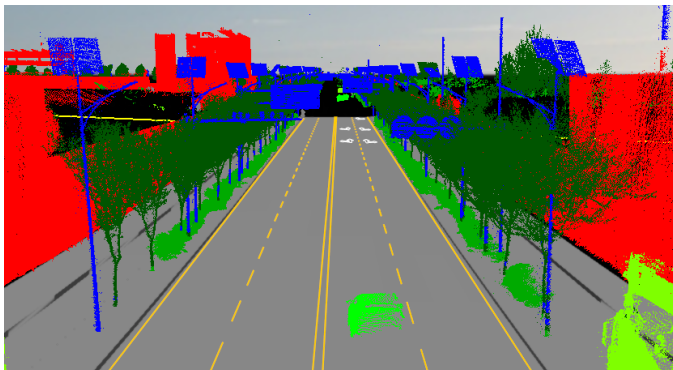
Export standard terrain products that seamlessly integrate with GIS, CAD, and engineering platforms.

Scalable Processing for Massive Datasets

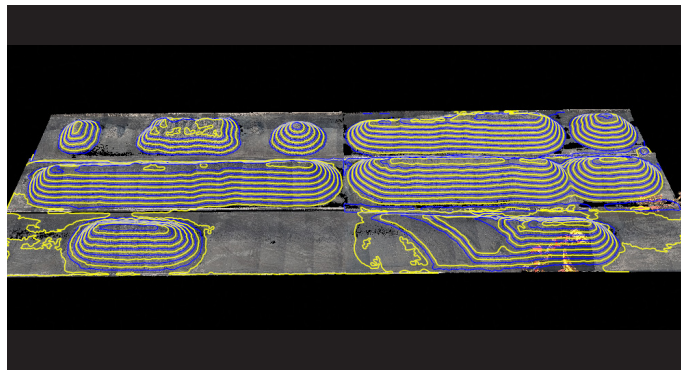
Efficiently process large-scale point clouds while maintaining high processing efficiency and terrain modeling accuracy.



Vehicle Collision Simulation Analysis



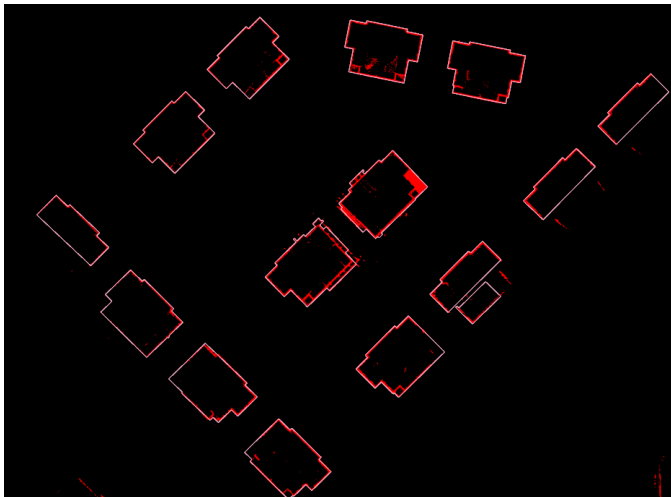
Road Terrain



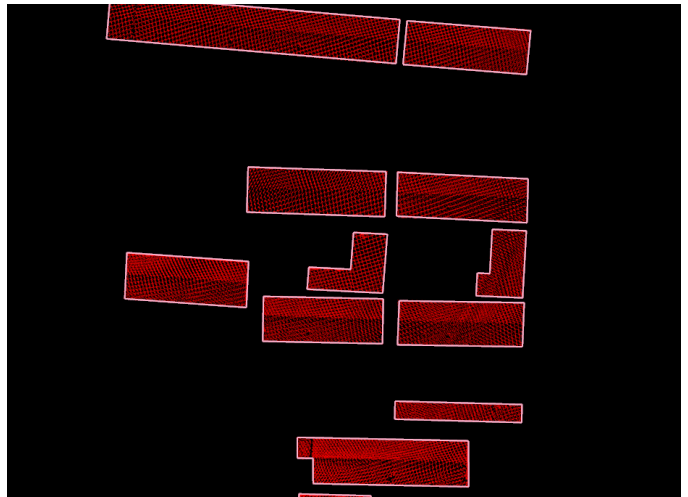
Contour Line

Asset Extraction

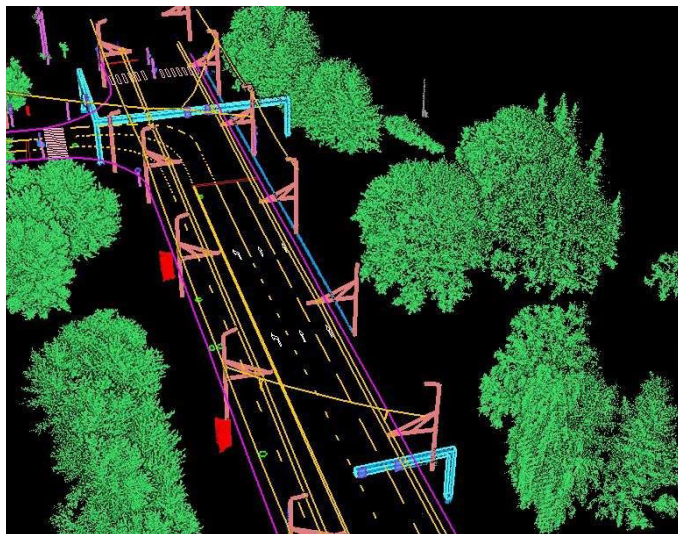
- Provides built-in fully automated extraction models for road markings and assets, enabling one-click extraction of dozens of feature types.
- Supports customized road marking and facility extraction models based on synthetic samples, with local model training and inference capabilities.
- Provides a customizable road marking symbol library, enabling one-click drag-and-drop with highly accurate results.
- Supports the drawing of special symbols such as characters and letters, enriching the deliverable database.
- Supports interactive automatic detection of multiple feature types to improve mapping efficiency.
- Provides a comprehensive road feature template library with one-click drag-and-drop mapping.
- Supports customization of linear facility templates to achieve batch extraction of linear elements.
- Supports batch extraction of existing railway lines and centerlines.
- Supports individual segmentation and parameter extraction of road assets, such as poles and vehicles.
- Supports one-click extraction of building exterior contours.



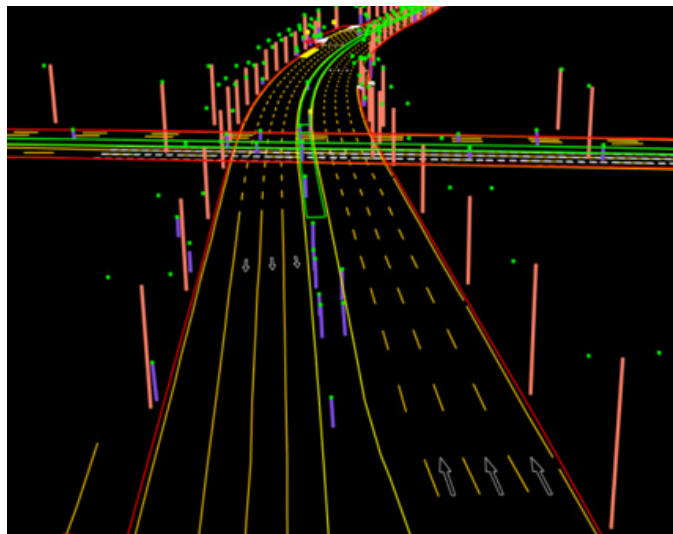
Building exterior contour extraction results from handheld data



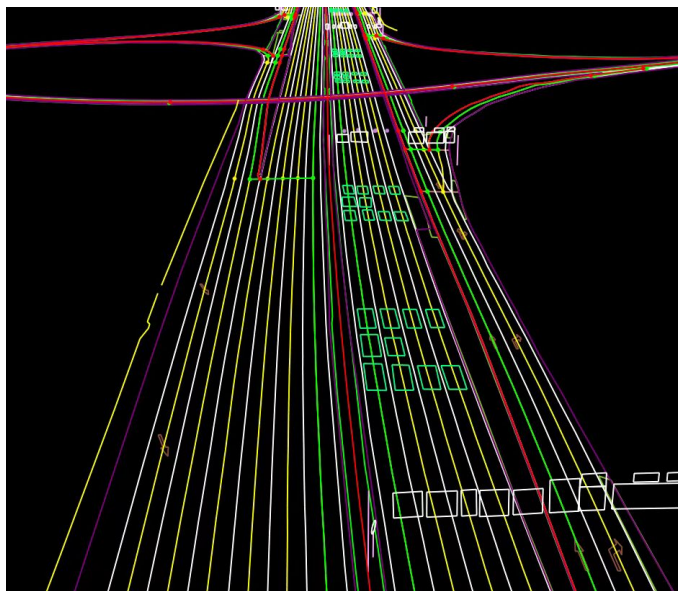
Building exterior contour extraction results from airborne data



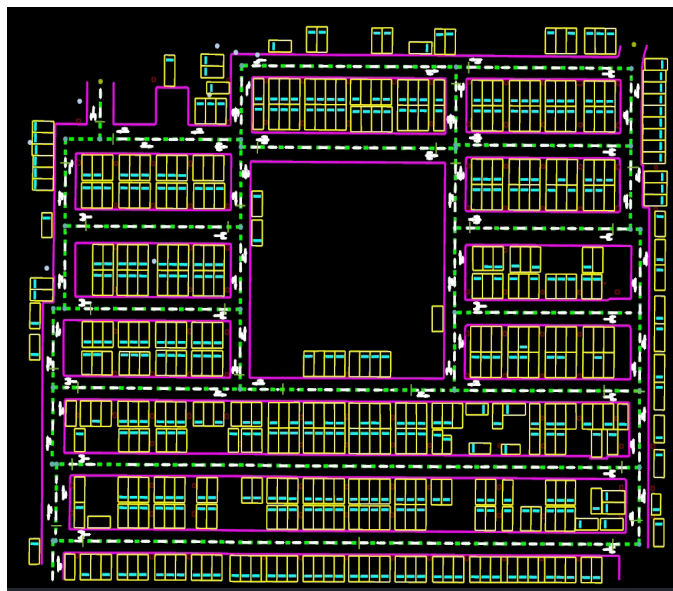
Urban Road Scene



Overpass Scene



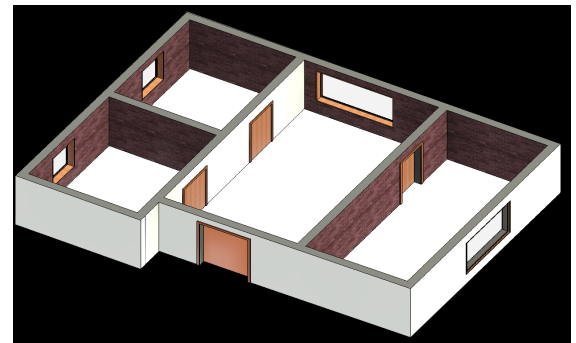
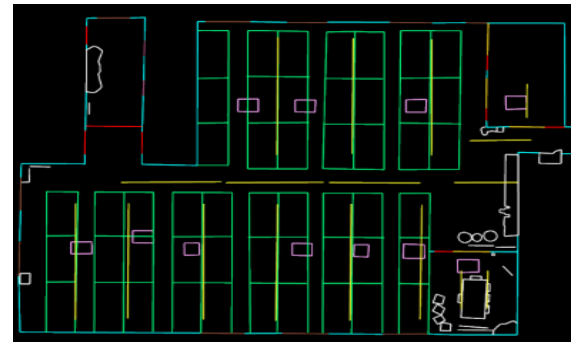
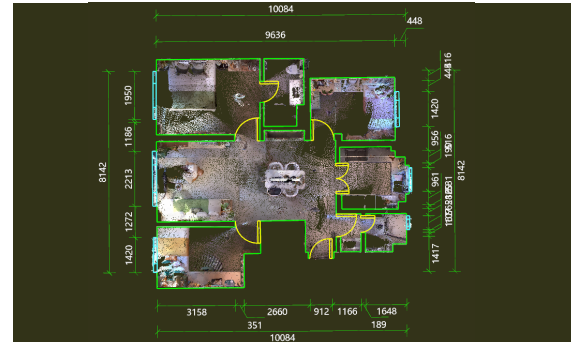
Highway Scene

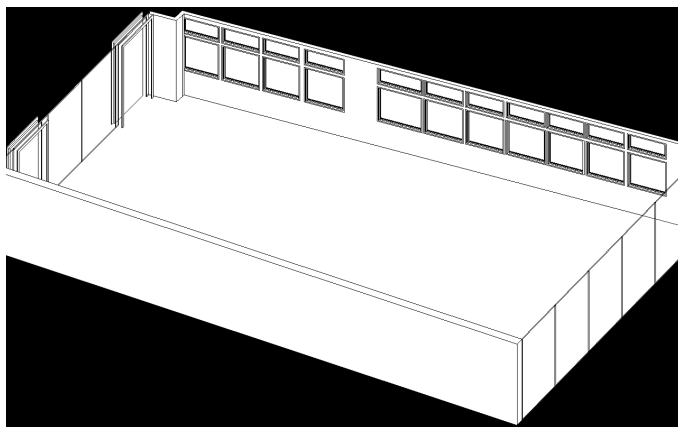
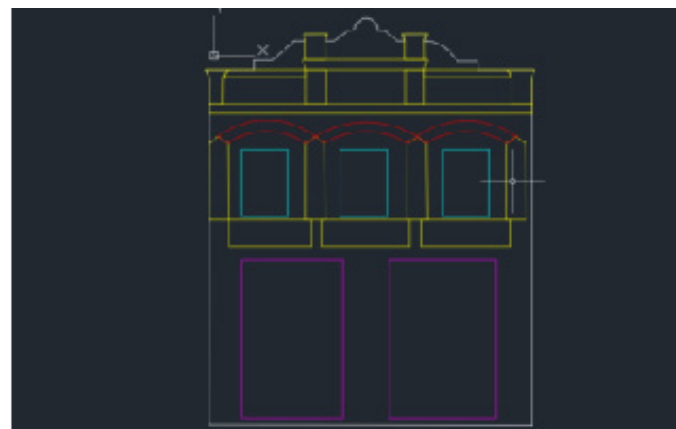
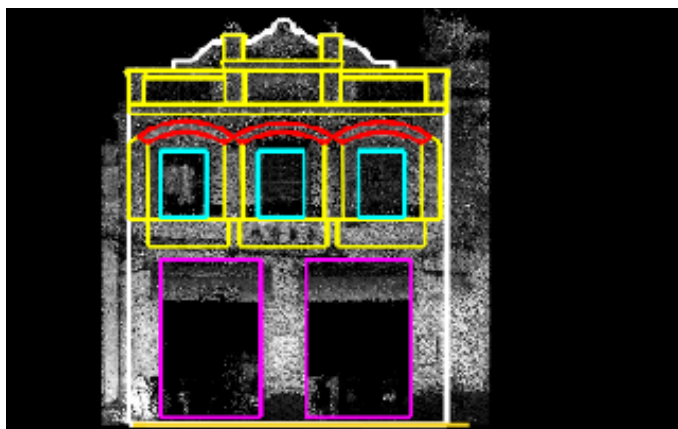
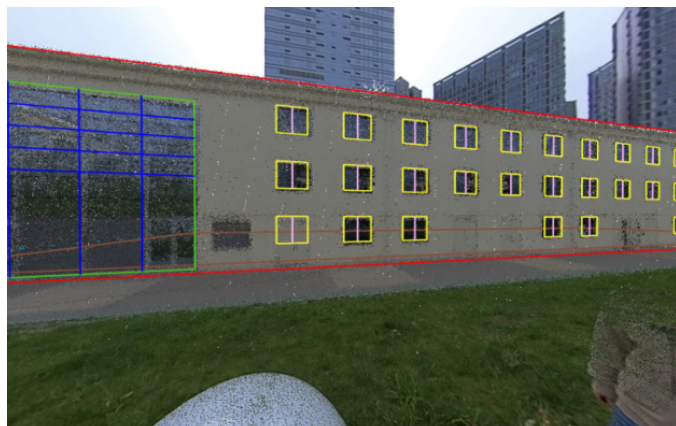
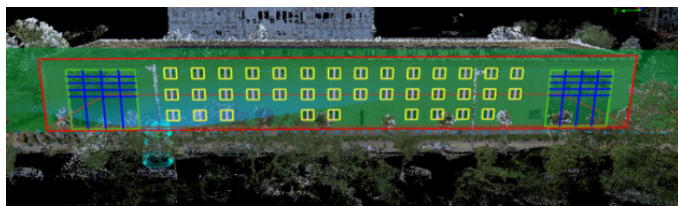


Underground Parking Garage Scene

Architectural Drawing

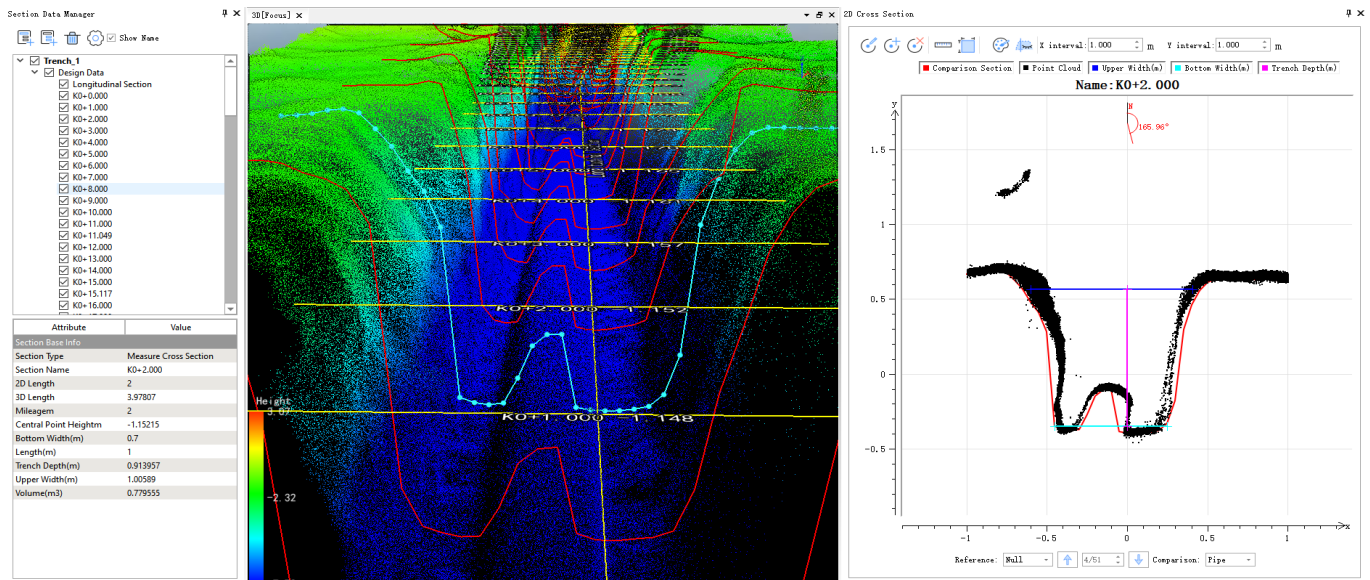
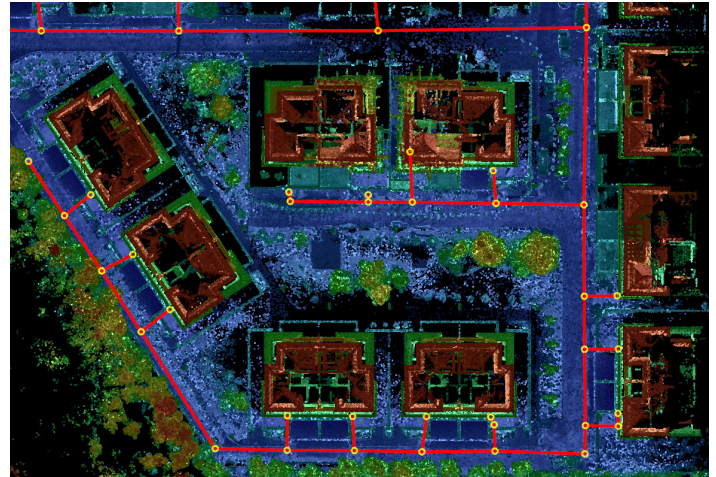
- One-Click Vectorization – Automatically generates floor plans, intelligently extracts elevation structures, and rapidly creates BIM models with minimal manual intervention.
- Smart Drawing Tools – Supports merging, splitting, node editing, construction lines, grouped arrays, and more, covering 2D, elevation, and 3D modeling workflows.
- Accurate Measurement & Calculation – Provides real-time length and area measurements, supports 3D model verification, ensuring precise and reliable results.
- Direct Compatibility with LiGrip, LiBackpack, and LiMobile – Directly utilizes point cloud and imagery data without format conversion.
- Multi-Mode Data Acquisition – Supports baseline drawing, multi-structure elevation unfolding (polygon, curve, cylinder), and BIM-linked point cloud modeling for versatile surveying needs.
- Panoramic Imagery Assisted Mapping – Integrates panoramic imagery with point cloud data to enhance the completeness and accuracy of feature mapping.
- Point Cloud-Driven Modeling – Supports automatic contour extraction, 3D/section drawing, and synchronized vector-BIM model editing for rapid, high-precision model generation.
- Batch Processing – Enables one-click extraction of elevation windows and intelligent unfolding of building structures, significantly improving efficiency.
- Multi-Format Output – Exports results in DXF, orthophoto, and other formats, ensuring compatibility with CAD, GIS, BIM, and other platforms.





Trench & Pipeline

- **Intelligent Extraction:** Automatically extracts pipeline routes and 3D trench profiles from LiDAR point cloud data.
- **Key Point Annotation:** Allows manual annotation of pipeline key points, such as elbows and tees, improving the completeness of pipeline network information.
- **Accurate Parameter Calculation:** Calculates key engineering parameters, including trench width, depth, excavation volume, and over-/under-excavation, with one-click processing.
- **3D Visualization:** Directly visualizes pipeline layouts and trench spatial relationships from point cloud data.



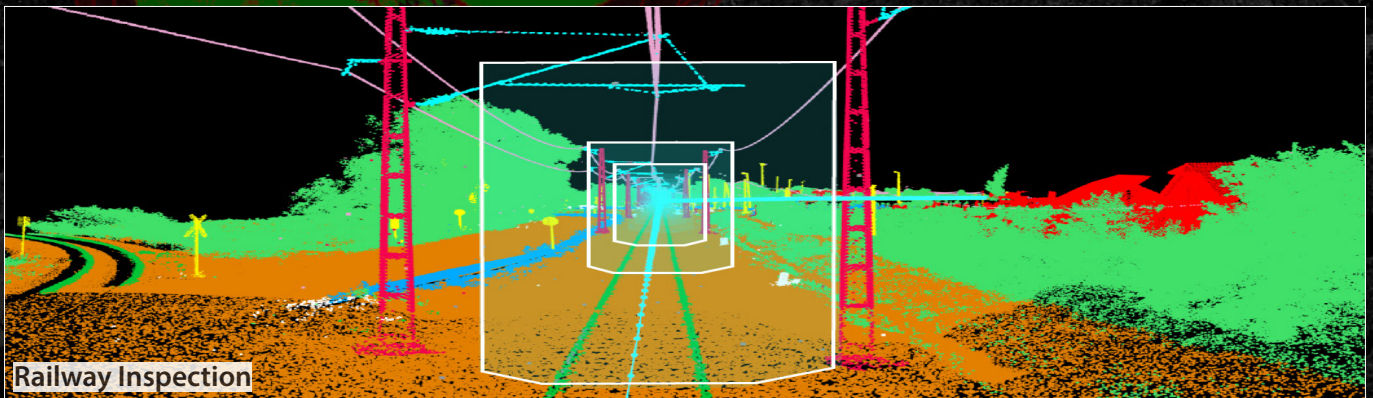
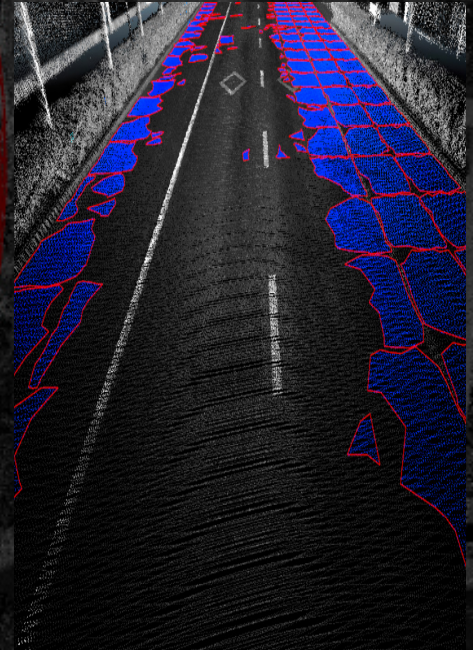
Road Condition

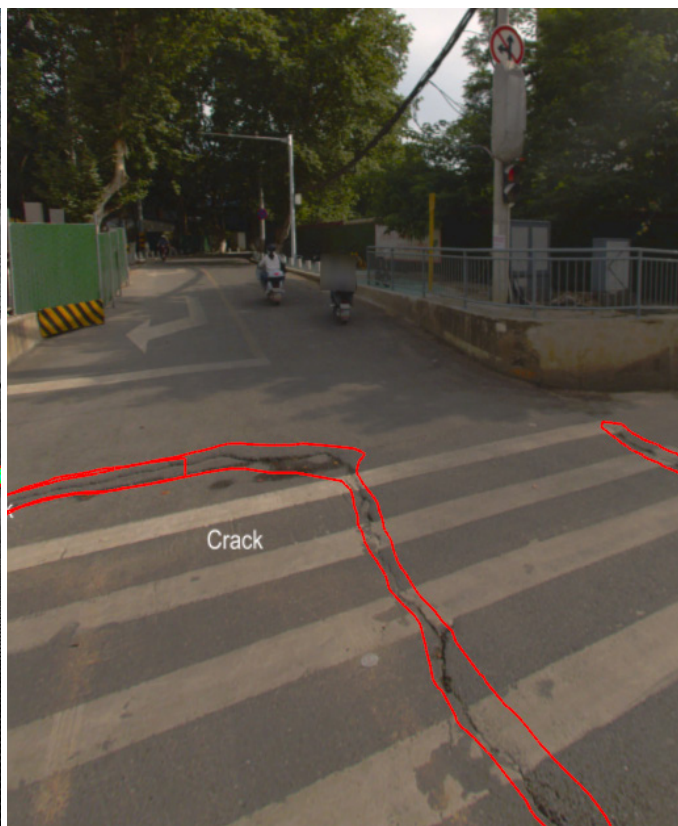
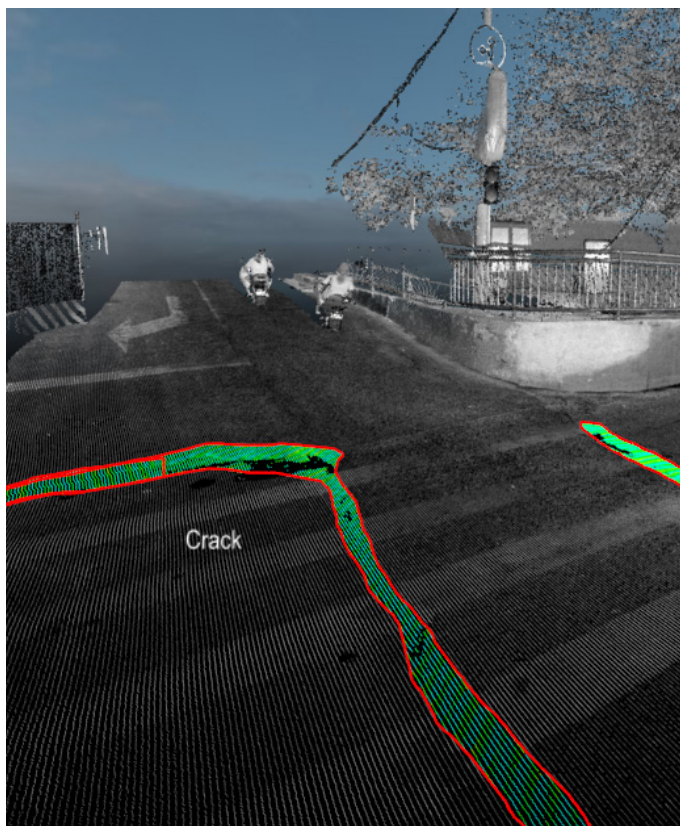
AI-Powered Intelligent Road Inspection and Evaluation.

- AI-based road damage detection: Accurately detects cracks, potholes, and other pavement defects, automatically calculates the Pavement Condition Index (PCI), and supports multi-source data fusion and editing.
- Road analysis: Supports clearance analysis, viewshed analysis, height-limit analysis, and vehicle passability analysis to meet the needs of roads, railways, tunnels, and other scenarios.
- Multi-phase data comparison: Automatically generates standardized comparison reports to support maintenance decision-making and project acceptance.

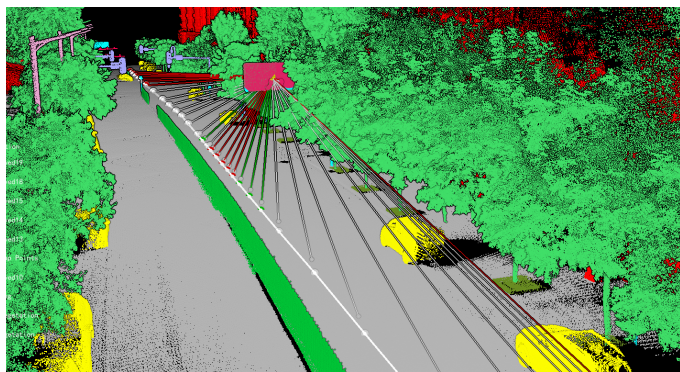
3D Spatial Analysis and Intelligent Computation

- Professional cross-section analysis: Supports roads, railways, tunnels, and other scenarios, providing key parameter calculations such as slope and over/under-excavation.
- Construction and maintenance assistance: Estimates volumes and evaluates structures based on cross-section data to optimize operational planning.

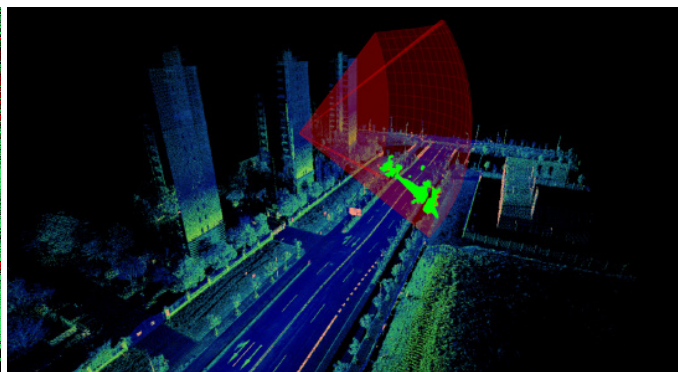




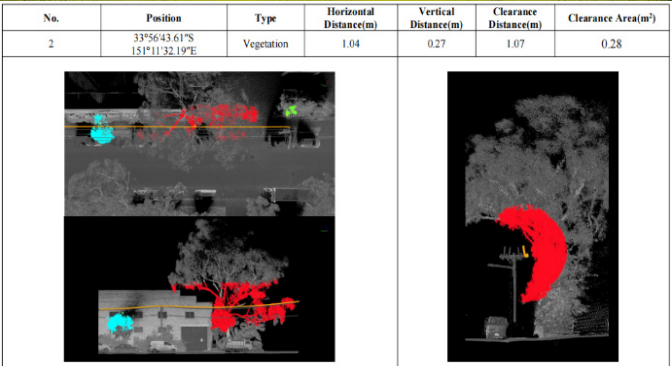
AI-based Pavement Damage Detection



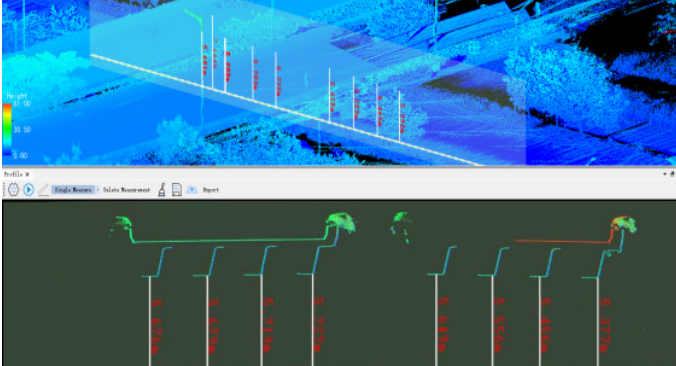
Viewshed Analysis based on Target Point



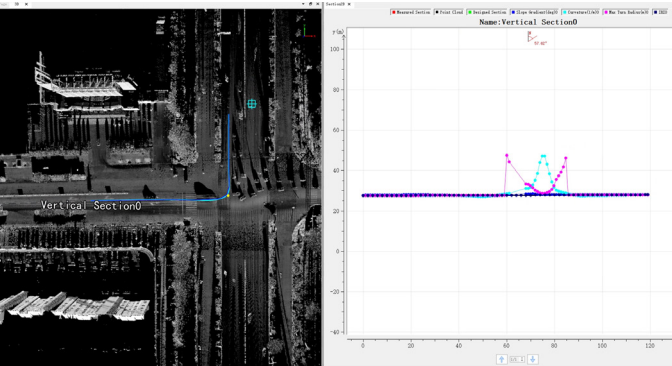
Viewshed Analysis



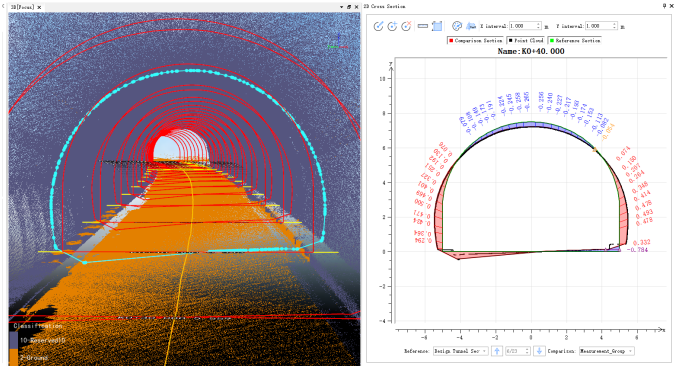
Urban Power Distribution Line Analysis



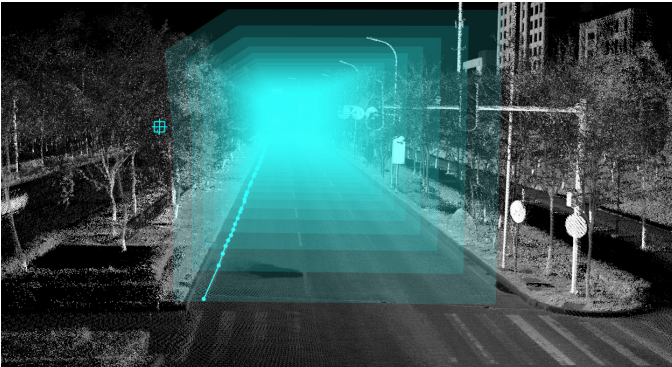
Bridge Height Limit Analysis



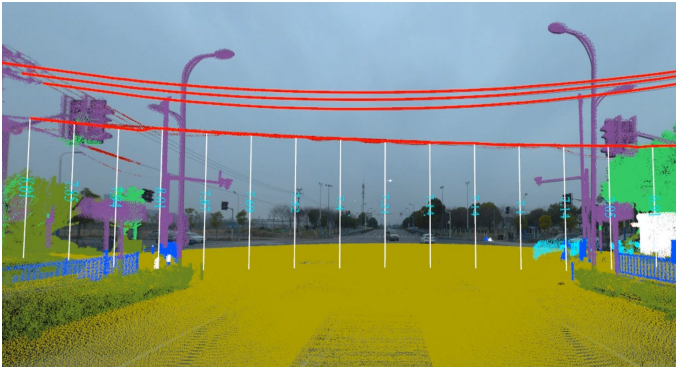
Road Section Analysis



Tunnel Section Analysis



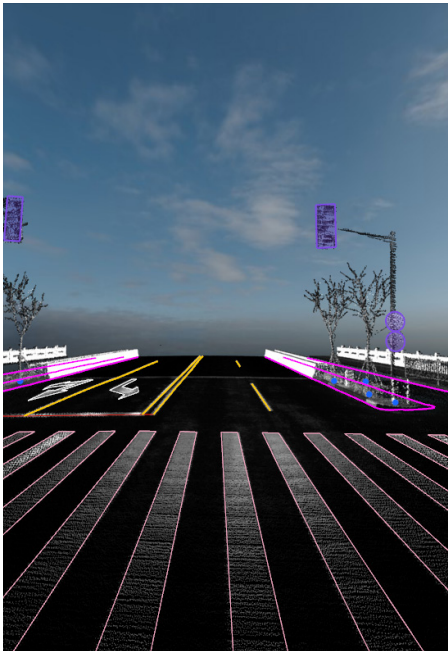
Clearance Analysis

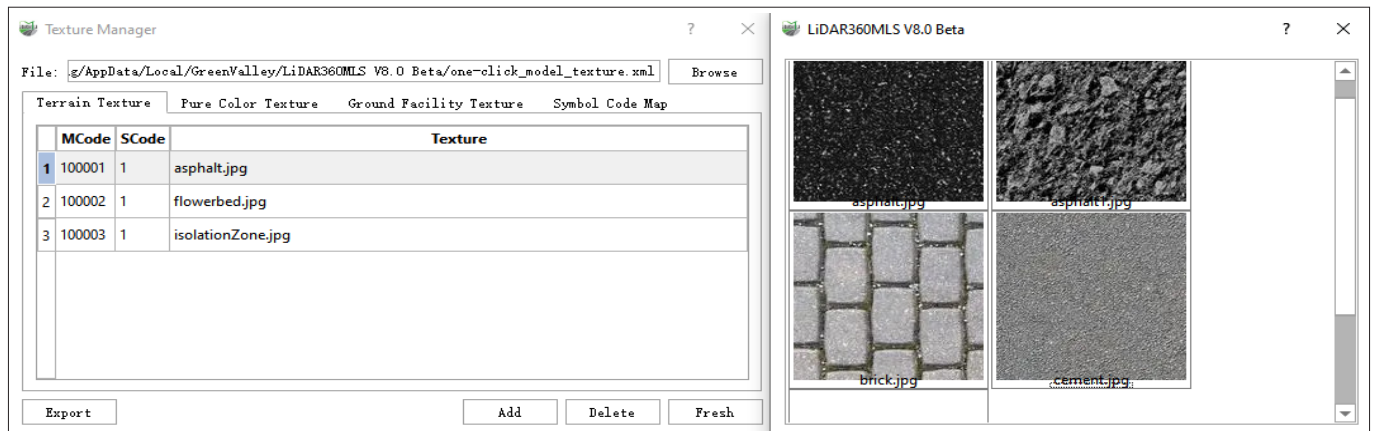
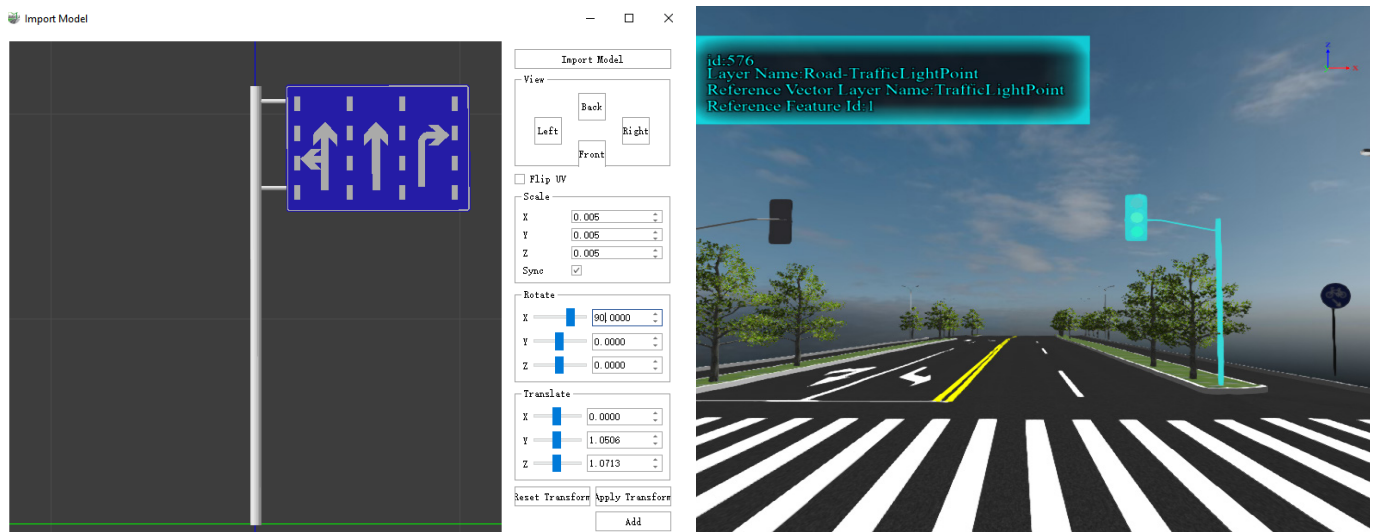
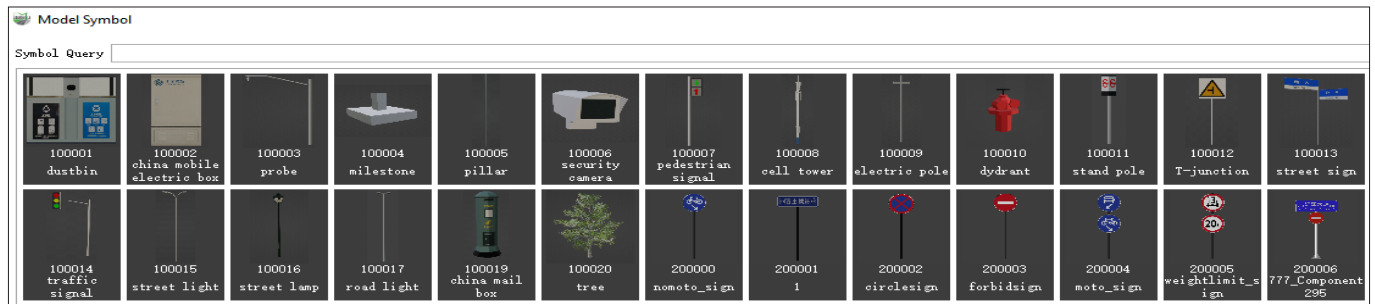


Power Line Height Limit Analysis

Road Scene

- Supports one-click generation of component-level 3D reality models.
- Supports configurable texture rules to adapt to different project requirements.
- Supports automated quality inspection.
- Supports expansion of model libraries and customized model texture configuration, with more than ten model editing tools.
- Supports model export in OBJ and OSGB formats.

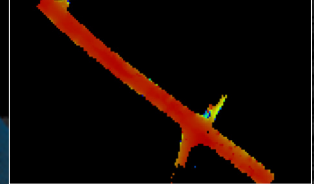




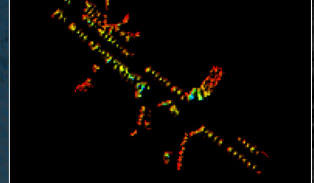
Forestry

- Supports AI-based point cloud classification.
- Supports seed point extraction in single-point, batch, and global modes.
- Supports individual tree segmentation and parameter extraction.
- Provides an individual tree editor with parameter measurement tools.
- Supports measurement of parameters including DBH, Height, Crown Width, Crown Length, Crown Diameter, Crown Diameter SN, Crown Diameter EW, CBH, Angle, Area, and more.
- Supports individual tree management with parameters and photos.
- Generates ecological landscape thematic maps.
- Supports simulation analysis of Green Viewing Ratio (GVR), Green Volume, Sky View Factor (SVF), and other indicators.
- Supports batch processing for ecological landscape analysis, enabling large-scale scene analysis.

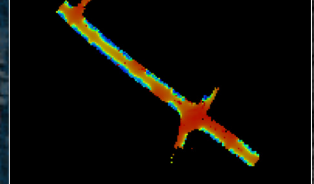
Building View Ratio (BVR)



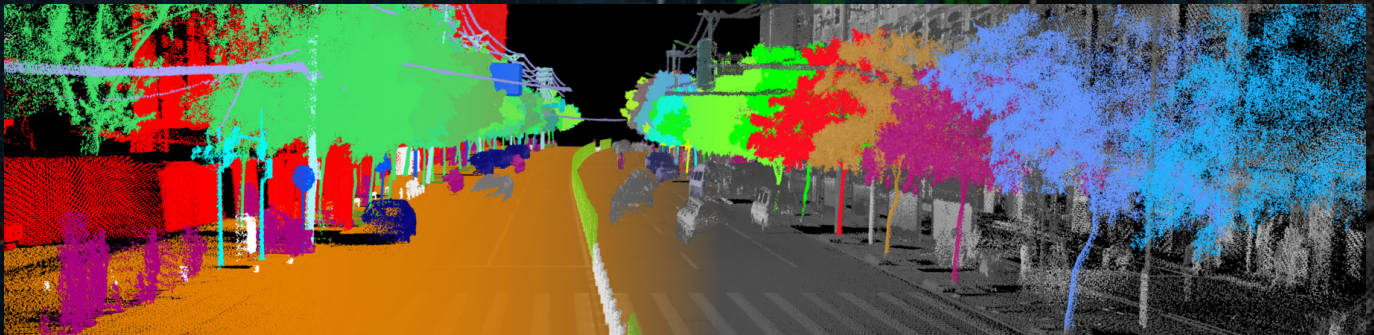
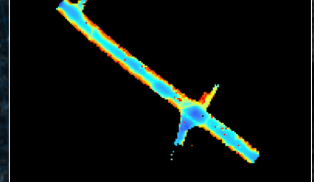
Green Volume (GV)



Green Viewing Ratio (GVR)



Sky View Factor (SVF)



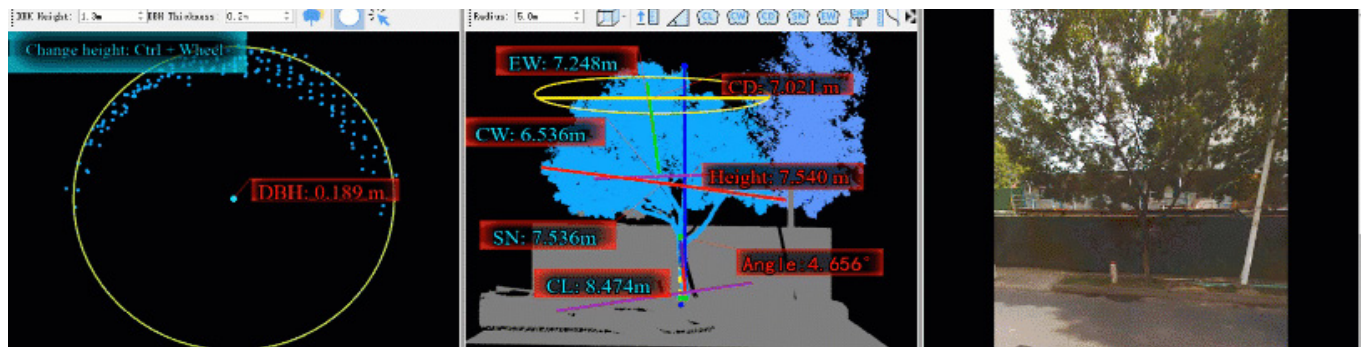
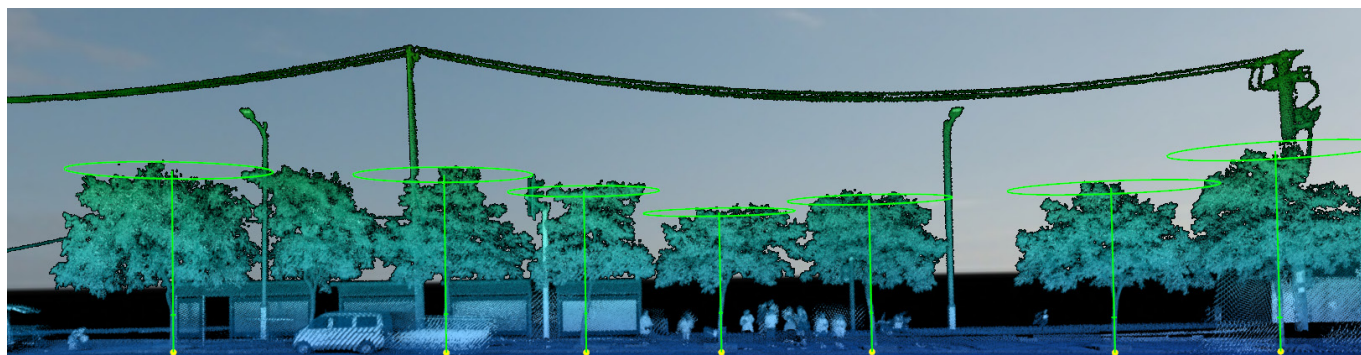
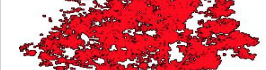


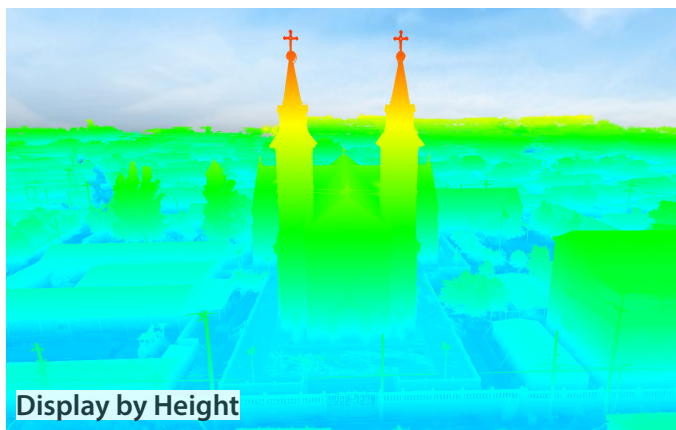
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1	Blob	626			12.329	0.189	7.540	4.656	7.021	7.465	6.886	8.474	6.536	10.718	141.178	
2	Blob	631			12.702	0.285	11.969	2.941	8.041	9.909	8.135	10.852	8.060	50.779	252.884	

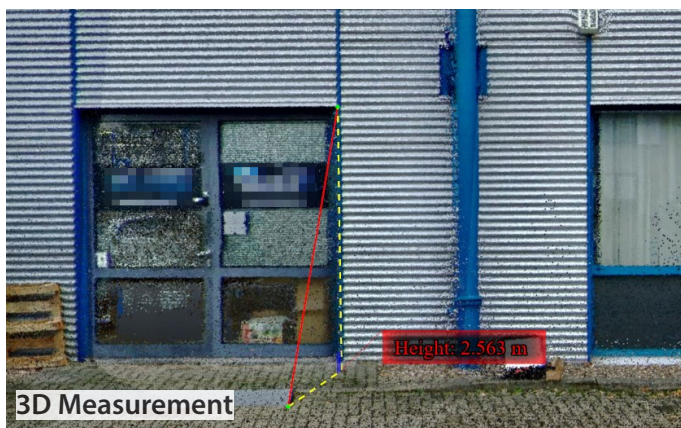
Tree ID	Location(m)	Z(m)	Elevation(m)	Height(m)	DBH(m)	CD(m)	SN(m)	EW(m)	Area(m ²)	Volume(m ³)	Distance(m)	Azimuth(°)
1	532242.752, 3373649.822	10.696	10.696	6.806	0.165	4.103	4.252	4.392	13.223	37.522	114.573	81.851
												
												

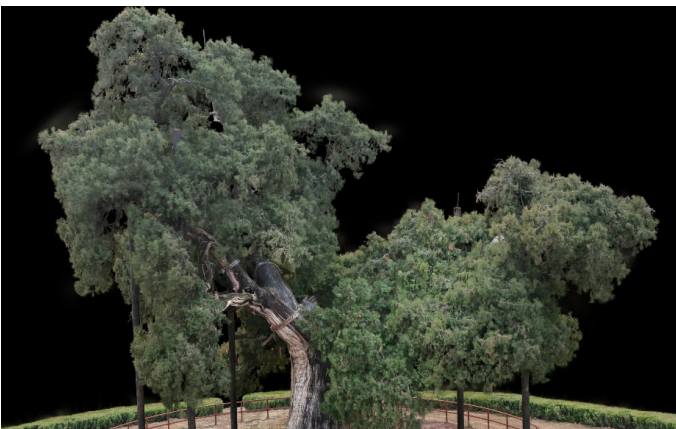
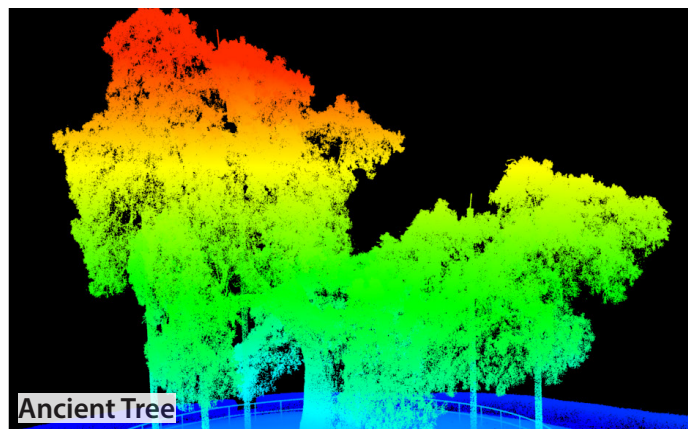
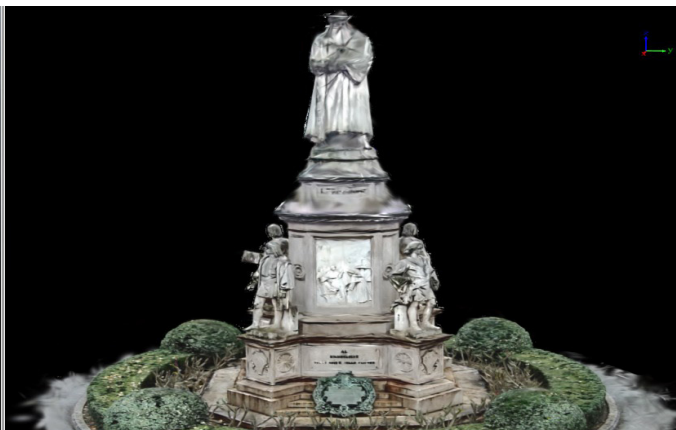
GSReconstruction

- Supports Gaussian Splatting reconstruction from LiGrip data.
- Supports Gaussian Splatting reconstruction from UAV data.
- Supports one-click Gaussian Splatting reconstruction from fused multi-source data captured by handheld devices and UAVs.
- Supports Gaussian Splatting reconstruction from standard COLMAP datasets.
- Supports cluster-mode reconstruction, exponentially improving efficiency for large-scale scenes.
- Supports seamless rendering of large-scale Gaussian data with hundreds of millions of points.
- Supports generating photo-realistic 3D models with rich details for highly realistic scene representation.
- Supports Gaussian models containing absolute coordinate information, enabling precise 3D measurements.
- Supports synchronized visualization, measurement, and 3D mapping across Gaussian data, point clouds, and panoramic imagery.
- Provides the industry's first 3D Gaussian model editor, featuring selection and clipping, class editing, individual object editing, noise point editing, flattening, and more.
- Supports importing and editing reconstruction results from third-party software such as DJI Terra.
- Supports arbitrary and edge-based cross-sections with full editing, measurement, and mapping functions.
- Supports import and export of LiSplat and PLY formats.











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